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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/058,104	01/29/2002	Keiichi Chihara	B0104T	1202

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EXAMINER
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ALBERTALLI, BRIAN LOUIS

ART UNIT	PAPER NUMBER
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2655

DATE MAILED: 12/20/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/058,104

Applicant(s)

CHIHARA, KEIICHI

Examiner

Brian L. Albertalli

Art Unit

2655

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 October 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 5-14 is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 October 2005 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## DETAILED ACTION

### *Response to Arguments*

1. Applicant's arguments regarding claims 1 and 3 filed October 6, 2005 have been fully considered but they are not persuasive.

Regarding claim 1, the argument that Otsuka "fails to elaborate on the nature of the threshold value" (see page 13, 2<sup>nd</sup> paragraph of Applicant's arguments) is not persuasive, because Otsuka explicitly discloses the minimum phoneme duration value (threshold) is set *no less than the minimum value of a sample group of natural speech production* (column 6, lines 26-29). The fact that the threshold is derived from a sample group of natural speech production means the threshold value is "empirically found" (i.e. derived from observation), as claimed.

Furthermore, the argument that the method of setting the phoneme duration of Otsuka is "totally opposite" to the claimed invention (see page 13, 3<sup>rd</sup> paragraph of Applicant's arguments) is also not persuasive. While Otsuka disclose setting the duration equal to the threshold value when the phoneme duration is smaller than the threshold value, the threshold value is contained in a duration rule table (Fig. 4, threshold values  $\theta$ ) and is an empirically found phoneme duration (explained above). When the user-designated utterance speed exceeds the threshold in the duration rule table (threshold values  $\theta$ ), the duration is set to the corresponding threshold value contained in the duration rule table. Because the threshold values are contained in the duration rule table (Fig. 4,  $\theta$  column), the duration value is determined "using... said duration rule table", as claimed. That is, the "empirically found phoneme durations" in

the duration rule table are the threshold values, thus setting the phoneme duration to the threshold value “uses” the duration rule table to determine a phoneme duration.

Regarding claim 3, as explained above, Otsuka explicitly disclose the threshold value is empirically found in advance (column 6, lines 26-29), therefore the argument that the threshold value is Otsuka is “totally different” than the claimed invention (see page 14, 3<sup>rd</sup> paragraph of Applicant’s arguments) is not persuasive.

In response to applicant's arguments against the references individually, one cannot show nonobviousness by attacking references individually where the rejections are based on combinations of references. See *In re Keller*, 642 F.2d 413, 208 USPQ 871 (CCPA 1981); *In re Merck & Co.*, 800 F.2d 1091, 231 USPQ 375 (Fed. Cir. 1986).

In this case, Otsuka suggests switching between a rule based table and a prediction table to ensure that speech produced at a high utterance speed with still be understandable. Vermeulen et al. teach that it is also possible to use a rule set or a statistical model to generate the pitch contour. Modifying Otsuka to include a rule table and a statistical table for the pitch contour would ensure that at high utterance speeds, the rule table of pitch contour values would be used, and thus the output speech would have a more natural pitch contour. Therefore, it would have been obvious to one of ordinary skill in the art at the time of invention to further modify the combination of the applicant’s admitted prior art and Otsuka to include a statistical table and a rule table for the pitch contour, and to use the rule table when a maximum utterance speed threshold

had been exceeded, in order to realize a natural pitch contour regardless of the speech production time (utterance speed).

***Allowable Subject Matter***

2. Claims 5-14 are allowed.

The following is an examiner's statement of reasons for allowance:

Regarding claim 5, Hara selects sound quality based on the activity ratio of the CPU. While the activity ratio of the CPU may be related to the speech utterance speed, this is not equivalent to not changing the sound quality when a user-designated utterance speed exceeds a threshold. Absent any suggestion in the prior art of record of selecting "from said sound quality conversion coefficient table such a coefficient that sound quality does not change when a user-designated utterance speed exceeds a threshold", claim 5 is allowable over the prior art of record.

Regarding claim 7, the newly amended limitation of "said switch being controlled not to change the base pitch when the utterance speed exceeds a threshold" is not suggested by the prior art of record. Specifically, Rye does not disclose not changing a base pitch *when an utterance speed exceeds a threshold*.

Regarding claim 10, while it may be well known in the art to index speech with signal sounds (audible tones), there is no suggestion in the prior art of record to insert signal sounds only *when a user designated utterance speed exceeds a threshold*.

Regarding claim 12, while Walsh suggests greater emphasis should be given between sentences in high speed reading in a text-to-speech conversion system

Art Unit: 2655

(presumably for the last word of a first sentence and a first word of a second sentence), there is no suggestion in the prior art of record to return a leading word in a sentence to normal utterance speed *when a user-designated utterance speed exceeds a threshold*.

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

### ***Drawings***

3. The amendments to the drawings overcome the objections made in the previous Office Action. The objections to the drawings are withdrawn.

### ***Claim Objections***

4. The amendments to the claims overcome the objections made in the previous Office Action. The objections to the claims are withdrawn.

### ***Claim Rejections - 35 USC § 112***

5. The amendment of claim 7 overcomes the rejection of claim 8 under 35 U.S.C. 112, second paragraph. The rejection of claim 8 under 35 U.S.C. 112, second paragraph is withdrawn.

***Claim Rejections - 35 USC § 103***

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1 and 2 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, in view of Otsuka (U.S. Patent 6,546,367).

The applicant's admitted prior art discloses a method of controlling high-speed reading in a text-to-speech conversion system including a text analysis module for generating a phoneme and prosody character string from an input text (Fig. 15, 101); a prosody generation module for generating a synthesis parameter of at least a voice segment, a phoneme duration, and a fundamental frequency for said phoneme and prosody character string (Fig. 16); a voice segment dictionary in which voice segments as a source of voice are registered (Fig. 15, 105); and a speech generation module for generating a synthetic waveform by waveform superimposition by referring to said voice segment dictionary (Fig. 15, 103).

Applicant's admitted prior art does not disclose:

the step of providing said prosody generation module with a phoneme duration determination unit that includes both a duration rule table containing empirically found phoneme durations and a duration prediction table containing phoneme durations predicted by statistical analysis and determines a phoneme duration by using, when a

user-designated utterance speed exceeds a maximum utterance speed threshold, said duration rule table and, when said threshold is not exceeded, said duration prediction table.

Otsuka discloses a method comprising the step of:

providing said prosody generation module with a phoneme duration determination unit (Fig. 2, phoneme duration setting unit 5) that includes both a duration rule table containing empirically found phoneme durations (Fig. 4, threshold values  $\theta$ ) and a duration prediction table containing phoneme durations predicted by statistical analysis (Fig. 4, average value  $\mu$ , standard deviation value  $\sigma$ , and minimum value  $d$ ) and determines a phoneme duration by using, when a user-designated utterance speed exceeds a threshold, said duration rule table and, when said threshold is not exceeded, said duration prediction table.

See Figure 5. In step 107, an initial phoneme production time is determined dependent on the total speech production time  $T$  (thereby determining an initial rate of speech, column 3, line 63 to column 4, line 2 and column 4, lines 15-17). If this initial phoneme production time is less than the empirically found phoneme durations (threshold values  $\theta$ ), the threshold values are used as the phoneme duration (column 6, lines 8-10). Otherwise, the durations predicted by statistical analysis are used (average value  $\mu$ , standard deviation value  $\sigma$ , and minimum value  $d$  are used to set a phoneme duration with the most probable value, column 7, lines 22-27). The threshold values used are necessarily the maximum utterance speed, because any initial phoneme duration that is less than the threshold duration will be set to the threshold



duration (producing speech at the minimum phoneme duration is equivalent to producing speech at the maximum utterance speed).

It would have been obvious to one of ordinary skill in the art at the time of invention to modify the applicant's admitted prior art to use, when a user-designated utterance speed exceeds a threshold, said duration rule table and, when said threshold is not exceeded, said duration prediction table, in order to realize a natural phoneme duration regardless of the speech production time (utterance speed), as taught by Otsuka (column 14, lines 30-34).

8. Claims 3 and 4 are rejected under 35 U.S.C. 103(a) as being unpatentable over applicant's admitted prior art, in view of Otsuka, and further in view of Vermeulen et al. (U.S. Patent 6,810,379).

As discussed in reference to claim 1, above, the applicant's admitted prior art discloses all of the features of the instant claims, except:

the step of providing said prosody generation module with a pitch contour determination unit that has both an empirically found rule table and a prediction table predicted by statistical analysis and determines a pitch contour by determining both accent and phrase components with, when a user-designated utterance speed exceeds a maximum utterance speed threshold, said pitch contour rule table and, when said threshold is not exceeded, said pitch contour prediction table.

Otsuka discloses a method of switching between a statistical table and a rule-based table depending on the selected utterance speed (Fig. 5).

Neither the applicant's admitted prior art nor Otsuka disclose using those tables to determine a pitch contour.

Vermeulen et al. disclose that text-to-speech systems can use both rule based and statistical models (column 2, lines 10-11).

It would have been obvious to one of ordinary skill in the art at the time of invention to further modify the combination of the applicant's admitted prior art and Otsuka to include a statistical table and a rule table for the pitch contour, and to use the rule table when a maximum utterance speed threshold had been exceeded, in order to realize a natural pitch contour regardless of the speech production time (utterance speed).

### ***Conclusion***

9. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).


A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Brian L. Albertalli whose telephone number is (571) 272-7616. The examiner can normally be reached on Mon - Fri, 8:00 AM - 5:30 PM, every second Fri off.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Wayne Young can be reached on (571) 272-7582. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

BLA 12/13/05



W. R. YOUNG  
PRIMARY EXAMINER